# PLANTS USED BY THE INDIANS OF THE UNITED STATES.

BY DR. EDWARD PALMER.

[*Concluded.*]

*Textile Plants.—Yucca baccata.* This is one of the most useful plants to the Indians of New Mexico, Arizona, and Southern California. Its fruit is eaten while fresh and in the dry state. It grows from two to eighteen feet in height, and becomes a tall tree further southward, varying in diameter from eight to twenty inches. The bodies of these plants are very fibrous. The Indians and Mexicans when in want of soap cut the stems into slices, beat them into a pulp, and mix them with the water in washing as a substitute for soap, for which it answers finely. The leaves are generally about two feet in length and are very fibrous. In order to remove the bast the leaves are first soaked in water, then pounded with a wooden mallet, at the same time occasionally plunged into water to remove the liberated epidermis. Then if not sufficiently clean and white it is returned to the water for a time and again put through the beating process; generally the second course is sufficient. The fibres of the leaves being strong, long and durable are adapted for Indian manufactures, and the savages of Southern California make therefrom excellent horse blankets.

All the tribes living in the country where this plant is found, use it to make ropes, twine, nets, hats, hair brushes, shoes, and mattresses.

The Diegeno Indians of Southern California have brought the uses of this plant to notice by the various articles they make from its fibres, and sell to white settlers. In preparing a warp for the manufacture of saddle blankets, it is first loosely twisted, then when wanted it receives a firmer twist. If the blanket is to be ornamented, a part of the warp during the first process, is dyed a claret brown, oak bark being used for that purpose. The loom in use among the Indians of to-day is original with themselves, and not borrowed, as some suppose, from the Spaniards. It is a simple affair consisting of two round, strong, short poles, one suspended and the other fastened to the ground. Upon these is arranged the warp. Two long wooden needles with eyes are threaded with the filling which is more loosely twisted than the warp, in order to give substance or body to the blanket. Each time that the filling is thrust between the threads of the warp by

one hand, the Indian female with a long, wide, wooden implement in the other hand, beats it into place. This tool resembles a carving-knife, but is much larger and longer. One edge is thin, and in this is made a number of teeth or notches not so sharp as to cut.

This plant so fibrous, and so abundant on land utterly worthless for the growth of anything more valuable, can be had for the gathering; and as paper materials are scarce, either alone or mixed with straw, would be valuable in the manufacture of that article.

*Y. brevifolia.*—The leaves of this plant are short, and not useful for Indian purposes, but it produces abundance of large seeds which contain much nutrition; they are ground fine, and either eaten raw or cooked in the form of mush by Southern California Indians. Vast tracts are covered with it, which assume a forest-like appearance about the Mojave river, Southern California, having trunks from ten inches to two feet in diameter, and twenty-five feet high, with numerous branches. Not only is the leaf fibrous, but the body is more so. As raw material for paper it is excellent.

*Y. whipplei.*—This plant in bloom is one of the finest garden ornaments, very common over most parts of California. The young flowering stems while in their tender condition, are eaten either raw or roasted by the Indians. The seeds are gathered, ground into flour, and eaten. The leaves yield a very soft white fibre which is capable of being made into very nice thread. Indians use this fibre to form a padding to their horse blankets, the outer part of which being made of the fibre from the *Yucca baccata* is very rough. A wooden needle is threaded with twine made from the same fibre, and the lining is firmly quilted to the saddle blanket forming a soft covering without which it would injure the animal's back.

*Y. angustifolia*, a very common plant in Utah and Arizona; the leaves yield the softest fibre of all the *Yuccas;* and, like all of them, is adapted to manufacturing purposes, especially for paper. The young flowering stems are used by Indians after the manner of asparagus; the same may be said of all the *Agaves* and *Yuccas*. They are eaten cooked or raw, and are not to be despised. The root is used after being pounded up as a substitute for soap.

*Agave utahense.*—The Pah-Utes strip the leaves from the heart

of the plants of this species, then heat stones, upon which the hearts are laid, the youngest leaves are next placed on, then weeds or grass, and finally, a coating of earth over all. This kiln remains three days, or until the contents are cooked, then it is uncovered. The hearts are either consumed as food immediately, or pounded fine, and pressed into flat, long, irregular-shaped cakes, about ten inches wide and fifteen long. They have a pleasant sweet taste, but the dirty black color might be objectionable to some. It is very nutritious, and the Indians of Utah become quite fat while living upon it. The tender inner leaves baked with the hearts are pounded and pressed by the hands into flat cakes, but are not so sweet or palatable as the hearts, and are full of fibres of a brown color. Its fibrous nature adapts these cakes for transportation. Indians in traveling or hunting, carry them tucked under their belts, and take off pieces as they go along to chew, spitting out the fibre or use it for gun wads. The hearts of all the *Agaves* when roasted yield this palatable kind of food.

*A. deserti.*—This is on the whole one of the most useful of natural productions to the Arizona, New Mexican and Lower California Indians. The heart of the plant after being roasted is a nutritious article of diet; from it is distilled a strong liquid called *mescal* by Mexicans; the seeds are ground into flour and eaten; the leaves are long and very fibrous and are cleaned like those of *Yucca baccata.* Sometimes after the leaves are dead and quite dry they are pounded until the epidermis is separated. The fibre thus cleaned is not so smooth and white as that soaked first in water, but very strong and durable ropes, mats, nets and sewing thread are made therefrom. This is a very abundant plant, covering many thousands of acres of land, unfit to grow anything more useful. A plant that contains so much fibre, surpassing in length and strength many other fibres in use for cordage and for paper, must some day be cultivated on the desert wastes of the United States.

*A. shawii,* one of the finest garden plants, but the fibre is only suitable for paper, being short. The Indians are very fond of a sweet honey-like nectar found in the base of its flowers; in fact it tastes like honey and water. It is only found near San Diego, California.

*Willow trees.*—Those along the Colorado river, Arizona, yield

abundance of long, soft bark, from which the Indians on this stream make ropes and twine for domestic purposes as well as sandals and mats. The females generally dress scantily, only that part of the body from the waist to the knees is hidden from view. This custom is observed by most of the Indian females living along the Colorado river. They strip off the bark from the willow trees and bury it in blue mud for a few days, after which it is taken out, washed clean and dried. It is now soft, pliable, and easily handled. Being cut into requisite lengths, they are fastened very thickly to a belt of the wearer.

The Colorado river Indians are said to make a fine drink from the flowers of the willows.

*Apocynum cannabinum.*—The Indians of Southern Utah, California and Arizona use the fibre prepared from the stems of this plant to make ropes, twine and nets; and before the advent of Europeans it was used in the manufacture of various articles of clothing. In order to remove the fibre the woody stems are first soaked in water, the bast with the bark is then easily removed. The latter being washed off, leaves a soft, silky fibre of a yellowish-brown color, which is very strong and durable. I have seen ropes made of it that have been in constant use for years.

*Urtica holosericea.*—The fibre of this plant is used by the Indians of Southern California to make their bow strings. In order to separate the fibre the plant has to go through the same process as hemp; its fibre resembling that of the latter, being equally strong and durable.

*Cowania mexicana*—This tree before the advent of Europeans was the great source from which the Nevada and Utah Indians obtained the materials for their dress goods. The outer bark is rough, but the inner is soft, silky and pliable, and of a brownish color. It is removed in long strips, varying in width, a desirable quality in a bark that is used in the manufacture of clothing, sandals and ropes. These articles were formerly made by braiding strips of bark together, or woven with the hand loom. Females made skirts from strips of this bark by braiding a belt to which they suspended many strips of the same material, hanging down to the knees like a long fringe; the rest of the person was naked in summer. Mats were also made from this bark which were used as beds.

*Medicines.—Chlorogalum pomeridianum*, common soap root of

California, and called by Indians and Mexicans *Amole.* It produces a large bulb which yields a great quantity of saponine, very good for washing, for which purpose it is much used by poor people and the Indians of California. The rough covering of the root is formed into bunches, tied up and used for hair brushes by the Indians.

*Datura meteloides* (Jamestown weed).—The California Indians make a decoction of this plant which is given to young females to stimulate them in dancing. After the root is bruised and boiled in water, the liquid, when cold, is taken internally to produce a stupefying effect, and is much used by California Indians.

The Pah-Utes call this plant *Main-oph-weep.* They bruise the seeds, soak them in water and expose the mixture to the sun's rays to cause fermentation. This being effected, the liquid is drank and has the same narcotic effect as the preparation made from the plant, or root with the alcoholic effect added.

*Nicotiana trigonophylla, N. bigelovii, N. attenuata.*—The leaves of all these species of *Nicotiana* are used as tobacco by the Indians of Arizona, Utah, New Mexico, and Southern California. The strength is said to be greater than that of the cultivated variety, though the leaves are smaller.

*Ligusticum apiifolium,* Angelica of the settlers of Utah, *Pah-net-snap* of the Pah-Utes.—It is a favorite medicine with these Indians. The root is bruised and used as a poultice for sprains and bruises. A tea is made from the roots and is taken internally for pain in the stomach. The Indians if afraid of catching contagious diseases fill their nostrils with pieces of the root. The strong, aromatic, carroty smell may have induced them to believe in the efficacy of this plant as a prophylactic.

*Berberis aquifolium* or *Oregon grape.*—From the roots of this plant a decoction is made in water, or they are steeped in liquor, and taken internally. It is a good remedy for general debility, or to create an appetite, and is considered equal to sarsaparilla in its medicinal virtues. It is a favorite medicine with the California Indians.

*Anemopsis californica, Yerba Mansa* of the Mexicans.—The root of this plant is a great remedy among the Indians of Arizona, and Sonora in Mexico, and Southern California. It has a strong peppery taste and odor. A tea made from the roots and a powder prepared from the same and applied to venereal sores are a great

remedy. The powder is advantageously used on cuts and sores, as it is very astringent. The leaves after being wilted by heat and applied to swellings are a sure cure.

*Achillea millefolium*, Yarrow of the settlers of Utah. The Pah-Utes make a tea from this plant and take it internally for weak and disordered stomachs. It is much used by Whites in the form of bitters.

*Cucurbita perennis*, called Chili Cojote by Mexicans.—The pulp of the green fruit is used with a little soap to remove stains from clothing. The roots of this plant are large and long, and when macerated in water are applied to piles, generally with good effect. The seeds are ground fine and made into mush and eaten as food by many Indians of Arizona and Southern California.

*Euphorbia polycarpa*, called by Mexicans Golendrina.—A strong decoction made from this plant and applied to snake bites soon produces reaction; many cures effected in this way are reported. In fact the Indians of Arizona and Southern California rely entirely upon it in such cases. Some years since, being in San Diego and wading in the salt water, a fish (*Sting-Ray*) plunged the bony projection at the base of its tail into my left foot and soon the swelling and pain became excessive; a Mexican woman made several gallons of a very strong decoction from this plant and plunged my leg up to the knee into it while hot, and in a few hours relief came.

*Eriodyction glutinosum*, *Yerba Santa* of the Mexicans, and a great medicine among the Indians of Southern Utah, Arizona, and California. A decoction made from this plant and taken internally for rheumatism and partial paralysis, or applied externally, is an excellent remedy. For affections of the lungs the leaves are used by smoking or chewing dry, or a tea is made from them and drank.

*Micromeria douglasii*, *Yerba Buena* of the Mexicans.—This is an interesting plant, growing near the sea coast of California, having a strong minty smell. It is a favorite medicine with the Mexican population of California. The Indians of the same section prepare a tea from it which is used for fevers and colds. In case of headache a quantity of the plant is bound round the head.

*Artemisia tridentata*, commonly called sage brush.—The Pah-Utes make a strong tea from this plant and take it internally for headache, colds and for worms. It is also a good stimulant, pre-

pared either with water or liquor. It yields a pungent oil which would be a profitable article of commerce.

*A. filifolia, Southern wood.*—This plant on distillation yields a very penetrating oil which is good for liniments, and the Pah-Utes make a decoction from it excellent for swellings and bruises.

*A. ludoviciana, A. dracunculoides.*—The seeds of these two species are gathered by the Pah-Utes, ground fine, made into mush and eaten. It is anything but a tempting dish, having a dirty look and strong taste.

*A. ludoviciana.*—This plant possesses medicinal virtues. The Pah-Utes make a strong tea of it and use it internally to assist child-birth, whenever assistance is required, which is seldom. In case of hemorrhage from the nose they stuff wads of the fresh plant into the nostrils.

*Oreodaphne californica.*—This fine evergreen tree of California has a very strong spicy odor. By rubbing the hands and face a short time with the leaves a very distressing headache will be produced. Hahnemann is not the only discoverer of the fact that like cures like; for long before he was born, the Indians of California were aware of the power which this plant had to produce a headache in those that are well and to cure those who are afflicted with it.

*Erythræa venusta*, a common remedy for ague by Indians and Mexicans of Arizona and Southern California. A tea is made of the plant and drank, and is certainly a very good substitute for quinine.

*Pæonia brownii*, by Mexicans called *Peo-neo.*—The root of this plant is used by the Indians of Southern California for colds, sore throats, and for pain in the chest. It is mealy and tastes somewhat like licorice. After being reduced to powder, it is either taken in that form internally or made into a decoction.

*Grindelia squarrosa.*—A decoction made from this plant is used by Mexicans and Indians of Southern California to cure colds. It is taken internally.

*Lygodesmia spinosa.*—This plant produces a short, fine, silky substance just at the juncture of the roots with the branches, which is used by the Digger Indians to stop the bleeding in gunshot wounds.

*Perezia arizonica.*—At the junction of the branches with the roots, and covering the greater part of the former is a soft, silky

substance which is used by the Apache Indians in gun-shot and other wounds, to stop hemorrhages, for which it is well adapted.

*Glycyrrhiza lepidota*, called by settlers of Utah, Desert root.—Pah-Utes eat it for its tonic effects. In taste it is much like licorice. Whites sometimes chew this root in place of tobacco.

*Ephedra antisyphilitica*, called *teamster's tea*, since men traveling with teams in New Mexico, Arizona and Southern California, camping among Indians, contract venereal diseases, and use this plant abundantly as a remedy, taken internally in the form of tea. A quantity of the plant is often taken along in case of need. This is a well-known remedy for gonorrhœa among many Indians and Mexicans. It is a strong astringent, and may prove valuable for its tonic properties.

*Dyeing Materials.—Rumex hymenosepalus*, a species of dock, is very abundant in sandy localities of mountain districts, and along river bottoms in Arizona and Southern Utah. Indians use the root for tanning buckskins. Moccasins made from leather thus tanned are rendered much more durable, and less liable to injury from moisture. It is also used in dyeing, as it yields a bright brown or mahogany color. Occasionally, Indians ornament their bodies by using this substance to form designs upon their limbs. Males especially, go more or less naked all the year round. The people of Utah use the leaf stem as a substitute for rhubarb to make pies.

*Sueda californica.*—At San Diego, California, it is commonly called glass wort, from the glassy brittleness of the stem. It yields much caustic potash, the ashes of which are used by soap makers. Indians gather the seed for food. The plant also yields a dark coloring matter.

*S. diffusa*, *Sah-ap-weep* of the Pah-Utes. The seeds of this plant are very small; nevertheless, they are gathered in great quantities. They are very difficult to clean, but the Indians are glad to obtain them. They are ground fine and made into biscuits. The seeds have a decidedly salty, potash taste. The flour tastes best when made into mush. The Coahuila Indians, of Southern California, make a fine black dye by steeping a quantity of this plant in water. For coloring their baskets black they take some mature rushes, and steep them several hours in this black dye, which is very penetrating, and the color is durable, but it has a very fetid, disagreeable smell.

*Dalea emoryi, D. polyadenia.*—Branches of this plant steeped in water form a bright yellowish-brown dye, and emit a strong rhue-like odor. The Coahuila Indians of California, to ornament their baskets of a yellowish-brown color, steep the rushes in a dye of that color, prepared from these *Daleas.*

*Larrea mexicana, Tah-sun-up* of the Pah-Utes.—It is one of the commonest plants of Southern California, Lower California, Arizona and Southern Utah. A lotion made by steeping branches of this plant in water, and applied to sores of man or beasts proves very efficacious, and a powder prepared from the dry leaves is good for chronic sores. From the old wood exudes an abundance of a gum which is softened and used by the Indians to cement their flint arrow heads into their shafts. The Apache Indians use this gum as a styptic. The settlers of Utah often use this plant in dyeing, as it produces a greenish-yellow color, and garments thus dyed have the curious property of emitting a very disagreeable, resinous odor ever afterwards upon being heated. In consequence of the peculiar odor of the fresh plant it is sometimes called creasote wood.

*Garrya flavescens.*—The fruit of this plant yields a violet coloring matter which is used by Arizona Indians. The leaves are used for ague and for colds, made into a tea and taken internally.

*Trichostemma lanatum.*—By Mexicans and the Indians of Southern California, it is called *Romero.* It is used by them to impart a dark or black color to the hair, and to promote its growth. A strong decoction is made of the leaves which is frequently applied to the hair. It is a very beautiful plant with bright blue flowers which emit a strong odor of hops.

*Orthocarpus luteus.*—This plant yields a delicate pink color, which is used by the Nevada Indians.

*Eritrichium micranthum.*—The slender roots of this plant yield a delicate yellow paint, used by Indians of Utah.

*Lithospermum longiflorum.*—The root yields a purple color; it is the Puccoon of the Eastern Indians.

*Polyporus officinalis*, a fungus which yields a reddish coloring matter which at one time was much used by Indians to paint their faces. Now vermilion is so cheap that it has to a great extent superseded this.

*Evernia vulpina*, a lichen which yields the highly prized

yellow paint found so frequently among the Western Indians. The Apaches of Arizona carry a portion of it carefully in a small buckskin bag. It is considered a charm when applied to the face, and a cross of this color on the feet enables them to pass their enemies unseen.

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## THE MAPLE-TREE BARK-LOUSE.

BY EMILY A. SMITH.

THE fruit and ornamental trees grown throughout the country are affected more or less by insects belonging to the *Coccidæ* family, or as they are commonly known, bark-lice. The elm and maple are among the number, the former infested with a *Mytilaspis* and the latter with *Lecanium acericorticis* Fitch.

The first account we find of this insect is from Dr. Asa Fitch, of Salem, New York, in the Horticultural report of that State, in 1859, page 776. From that time nothing further was written until 1867, when Walsh and Riley, probably from oversight of the former article, together with figure 1, renamed the species as *Lecanium acericola* in the American Entomologist, vol. 1, page 14, since which time it has been considered under the latter name, but as Dr. Fitch has priority to the species, I would desire re-establishing the first name, *Lecanium acericorticis* of Fitch.


FIG. 1.—*a*, *Lecanium* on Maple; *b*, *Lecanium* on Osage Orange.

Throughout the eastern and western States this insect occurs quite plentifully upon *Acer dasycarpum* and *saccharinum*, and I have carefully studied its life history, which will be published in the Seventh Entomological report of